Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1 – 60. (cancelled)

61. (previously presented): A wavelength-tunable light generator that is used in an optical coherence tomography device that measures the structure in the depth direction of a measurement object by irradiating said measurement object with light and detecting the reflected light or backscattered light produced within the measurement object, wherein said wavelength-tunable light generator is capable of changing the wave number of said light stepwise.

62. (previously presented): The wavelength-tunable light generator according to claim 61 in which the width of the tunable range of said wave number is at least $4.7\times10^{-2}\ \mu m^{-1}$ and the frequency width of the emitted light is no more than 13 GHz, comprising:

means capable of changing the wave number stepwise at wave number intervals of no more than $3.1\times10^{-4}\ \mu m^{-1}$ and time intervals of no more than 530 μs.

63. (previously presented): The wavelength-tunable light generator according to claim 61 in which the width of the tunable range of said wave number is at least $4.7\times10^{-2}\ \mu m^{-1}$ and the frequency width of the emitted light is no more than 52 GHz, comprising:

means capable of changing the wave number stepwise at wave number intervals of no more than $12.4\times10^{-4}\ \mu m^{-1}$ and time intervals of no more than 530 μs.

64. (previously presented): A wavelength-tunable light generator that is used as a wavelength-tunable light source of an optical coherence tomography device comprising a wavelength-tunable light source, means for dividing the output light of said wavelength-tunable light source into a first light beam and a second light beam, means for irradiating a measurement object with the first light beam, means for combining the first light beam that has been reflected or backscattered by said measurement object and the second light beam, means for measuring intensities of output light combined by said means for combining for each of wave numbers of said wavelength-tunable light source, and means for specifying, in the depth direction of said measurement object, the position at which the first light beam is reflected or backscattered by said measurement object from a set of said intensities of output light obtained for each of said wave numbers by means of said means for measuring,

wherein the width of the tunable range of the wave number is increased so that the resolution is no more than 80 μm and the frequency width and wave number interval of the emitted light are reduced so that the measurable range is at least 10 mm, said wavelength-tunable light generator further comprising:

means capable of changing the wave number stepwise at time intervals of no more than the time obtained by dividing the first value obtained by dividing said resolution by the speed 1 mm/s by the second value obtained by dividing the width of said tunable range by said wave number interval.

65. (previously presented): A wavelength-tunable light generator that is used as a wavelength-tunable light source of an optical coherence tomography device comprising a wavelength-tunable light source, means for dividing the output light of said wavelength-tunable light source into a first light beam and a second light beam, means for irradiating a measurement object with the first light beam, means for combining the first light beam that has been reflected or backscattered by said measurement object, and the second light beam, means for measuring intensities of

output light combined by said means for combining for each of wave numbers of said wavelength-tunable light source, and means for specifying, in the depth direction of said measurement object, the position and intensity with which the first light beam is reflected or backscattered by said measurement object from a set of said intensities of output light obtained for each of the wave numbers by means of said means for measuring,

wherein the width of the tunable range of the wave number is increased so that the resolution is no more than 80 μm and the frequency interval and wave number interval of the emitted light are reduced so that the measurable range is at least 10 mm, the wavelength-tunable light generator further comprising:

means capable of changing the wave number stepwise at time intervals of no more than the time obtained by dividing the first value obtained by dividing said resolution by the speed 1 mm/s by the second value obtained by dividing the width of said tunable range by said wave number interval.

66. (previously presented): A wavelength-tunable light generator that is used as a wavelength-tunable light source of an optical coherence tomography device comprising a wavelength-tunable light source, means for dividing the output light of said wavelength-tunable light source into a first light beam and a second light beam, means for irradiating a measurement object with the first light beam, means for combining the first light beam that has been reflected or backscattered by said measurement object, and the second light beam, means for measuring intensities of the output light combined by said means for combining for each of wave numbers of said wavelength-tunable light source, and means for specifying, in the depth direction of said measurement object, the position and intensity with which the first light beam is reflected or backscattered by said measurement object from a set of intensities of said output light obtained for each of the wave numbers by means of said means for measuring,

wherein the width of the tunable range of the wave number is increased so that the resolution is no more than 80 μm and the frequency width and wave number interval of the emitted light are reduced so that the measurable range is at least 2.5 mm, the wavelength-tunable light generator further comprising:

means capable of changing the wave number stepwise at time intervals of no more than the time obtained by dividing the first value obtained by dividing said resolution by the speed 4 mm/s by the second value obtained by dividing the width of said tunable range by the wave number interval.

67. (previously presented): The wavelength-tunable light generator according to claim 65, wherein said means for irradiating a measurement object with the first light beam are capable of scanning an irradiation position at which said measurement object is irradiated with the first light beam, said wavelength-tunable light generator further comprising:

means for constructing a tomogram of said measurement object on the basis of information specified by said means for specifying and information relating to said irradiation position.

68. (previously presented): The wavelength-tunable light generator according to claim 65, wherein said means for specifying subject a combination of real numbers comprising said intensities of said output light and said wave numbers to a Fourier transform.

69. (previously presented): The wavelength-tunable light generator according to claim 61, further comprising:

means for constructing a motion image of a tomogram of said measurement object by constructing a plurality of said tomogram.

70. (previously presented): The wavelength-tunable light generator according to claim 61, wherein a light-emitting element constituting the wavelength-tunable light generator is a wavelength-tunable laser.

71. (previously presented): The wavelength-tunable light generator according to claim 61, wherein a light-emitting element constituting the wavelength-tunable light generator is a super structure grating distributed Bragg reflector semiconductor laser.

72. (previously presented): The wavelength-tunable light generator according to claim 61, wherein a light-emitting element constituting the wavelength-tunable light generator is a sampled grating distributed Bragg reflector semiconductor laser.

73. (previously presented): An optical coherence tomography device, wherein the wavelength-tunable light generator according to claim 61 is used as a light source.

74. (previously presented): An optical coherence tomography device comprising the wavelength-tunable light generator according to claim 61, and further comprising:

means for dividing the output light of said wavelength-tunable light generator into a first light beam and a second light beam;

means for irradiating a measurement object with the first light beam;

means for combining said first light beam that has been reflected or backscattered by said measurement object, and the second light beam;

means for measuring intensities of output light combined by said means for combining for each of wave numbers of said wavelength-tunable light generator; and

means for specifying, in the depth direction of said measurement object, the position at which the first light beam is reflected or backscattered by said measurement object from a set of said intensities of output light obtained for each of said wave numbers by means of said means for measuring.

75. (previously presented): An optical coherence tomography device comprising the wavelength-tunable light generator according to claim 61, and further comprising:

means for dividing the output light of said wavelength-tunable light generator into a first light beam and a second light beam;

means for irradiating a measurement object with the first light beam;

means for combining said first light beam that has been reflected or backscattered by said measurement object, and the second light beam;

means for measuring intensities of output light combined by said means for combining for each of wave numbers of said wavelength-tunable light generator; and

means for specifying, in the depth direction of said measurement object, the position and intensity with which the first light beam is reflected or backscattered by said measurement object from a set of said intensities of output light obtained for each of said wave numbers by means of said means for measuring.

76. (previously presented): The optical coherence tomography device according to claim 74, wherein said means for irradiating a measurement object with the first light beam are capable of scanning an irradiation position of the first light beam, the optical coherence tomography device further comprising:

means for constructing a tomogram of said measurement object on the basis of information specified by said means for specifying and information relating to said irradiation position.

77. (previously presented): The optical coherence tomography device according to claim 74, wherein said means for specifying subject a combination of real numbers comprising the intensity of said output light and said wave numbers to a Fourier transform.

78. (previously presented): The optical coherence tomography device according to claim 74, further comprising:

means for constructing a motion image of a tomogram of said measurement object by constructing a plurality of said tomogram.

79. (previously presented): An optical coherence tomography device comprising the wavelength-tunable light generator according to claim 61, and further comprising:

a sample optical path that guides output light of said wavelength-tunable light generator to a sample without dividing the output light;

a partial reflection mechanism that returns a portion of the irradiated light of said sample optical path along said sample optical path; and

an optical detection optical path that guides the reflected light and backscattered light from the sample along said sample optical path and the reflected light from the partial reflection mechanism to a photodetector.

80. (previously presented): An optical coherence tomography device comprising the wavelength-tunable light generator according to claim 61, and further comprising:

a sample optical path that guides output light of said wavelength-tunable light generator to a sample without dividing the output light;

a partial reflection mechanism that reflects a portion of the light of said sample optical path along said sample optical path after affording the portion of light with a desired polarization characteristic;

a sample light polarization-specifying mechanism that irradiates the sample with light that has been transmitted by the partial reflection mechanism in said sample optical path after affording the transmitted light the desired polarization characteristic; and

an optical detection optical path that guides the reflected light and backscattered light from the sample and the reflected light from the partial reflection mechanism to means for dividing incident light into two components of the polarization directions which are orthogonal,

wherein two outputs of said means for dividing incident light into two components of the polarization directions which are orthogonal are detected by using a photodetector and an amplifier respectively, output data of said amplifier are sent to a data processor, and a tomogram showing the polarization characteristic of the sample is constructed by the data processing of said data processor.

81 – 120. (cancelled)